

REMARKS

Reconsideration and allowance of the present patent application based on the foregoing amendments and following remarks are respectfully requested.

By this Amendment, claims 1, 5, 7, 9-10, 16, 18, 25 and 28 are amended and claims 6, 8 and 15 are cancelled without prejudice or disclaimer to the subject matter therein. No new matter has been added. After entry of this Amendment, claims 1-5, 7, 9-14 and 16-28 will remain pending in the patent application.

Claims 1-4, 6-10, 12, 14 and 25-28 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Edo (U.S. Published Application No. 2003/0021671 A1). This rejection is respectfully traversed.

Claims 6 and 8 are cancelled without prejudice or disclaimer, thus rendering moot the rejection of these claims.

Claim 1 recites a load lock for a lithographic apparatus arranged to transfer an object into and from the lithographic apparatus, comprising, *inter alia*, a processor in communication with a pump to depressurize the load lock volume by the pump from a first pressure to a second pressure, the processor also being arranged to control the temperature conditioned structure such that the object is at a predetermined temperature that is higher than said desired temperature when said processor starts depressurizing said load lock volume. The cited portions of Edo do not teach or render obvious these features.

By way of review, the cited portions of Edo disclose a load lock chamber 3 provided adjacent a process chamber 1. See Edo at FIG. 2. The load lock chamber 3 includes a substrate holding structure 6 that includes an internal electrode 6 and heating element 62. See Edo at FIG. 3B.

However, unlike claim 1, the cited portions of Edo do not teach or suggest a processor as recited above. It is noted that these features of claim 1, which were previously recited in claim 8, have not been considered in the Office Action. The cited portions of Edo disclose that in evacuating the load-rock chamber 3, the relationship between a vacuum suction time and a pressure in the load-rock chamber 3 is monitored by the exhaust gas flowmeter 123 and the pressure gauge 31 of the load-rock chamber 3. See Edo at paragraph 91. When the relationship falls outside a predetermined range with respect to the curve, the opening degree of the exhaust valve 122 is controlled such that the relationship falls within the predetermined range. *Id.* The predetermined range is set narrower than an allowable value in the curve

representing the relationship between a pressure and a vacuum suction time decided from the adiabatic cooling of the substrate (wafer) W. *Id.* With this said, nowhere do the cited portions of Edo teach or suggest a processor arranged to control the temperature conditioned structure such that the object is at a predetermined temperature that is higher than the desired temperature when the processor starts depressurizing said load lock volume.

Thus, for at least this reason, claim 1 is patentable over the cited portions of Edo.

Claims 2-4, 9 and 22 are patentable over the cited portions of Edo at least by virtue of their dependency from claim 1 and for the additional features recited therein.

Claim 7 is patentable over the cited portions of Edo at least because this claim recite a load lock for a lithographic apparatus arranged to transfer an object into and from the lithographic apparatus, comprising, *inter alia*, a processor in communication with a pump to depressurize said load lock volume by said a pump to a predetermined first pressure, to wait during a predetermined time period and then to depressurize said load lock volume to a predetermined second pressure.

Edo is discussed above. The Office Action refers to paragraphs 91 and 105 of Edo as allegedly teaching or rendering obvious the above mentioned features of claim 7. Applicant strenuously disagrees. As noted above, paragraph 91 of Edo merely discloses that the relationship between a vacuum suction time and a pressure in the load-rock chamber 3 is monitored by the exhaust gas flowmeter 123 and the pressure gauge 31 of the load-rock chamber 3. *See* Edo at paragraph 91. Further, when the relationship falls outside a predetermined range with respect to the curve, the opening degree of the exhaust valve 122 is controlled such that the relationship falls within the predetermined range. *Id.* Paragraph 105 of Edo discloses that “[a]fter stopping [the] supply of the He gas, the second gate valve 5 is opened, and the second transfer mechanism 8 of the preliminary chamber 2 extracts the substrate (wafer) W in the load-rock chamber 3 to transfer it to the process station (exposure process portion) 20.” With this said, there is nothing in the cited portions of Edo that remotely teaches or renders obvious a processor in communication with a pump to depressurize the load lock volume by the pump to a predetermined first pressure, to wait during a predetermined time period and then to depressurize said load lock volume to a predetermined second pressure.

Thus, for at least this reason, claim 7 is patentable over the cited portions of Edo.

Claim 10 has been amended to recite the features of claim 15, which are indicated as being allowable in the Office Action. Thus claim 10 is allowable.

Claim 25 is patentable over the cited portions of Edo for at least the same reasons as provided above for claim 1 and for the features recited therein. For example, the cited portions of Edo do not teach or render obvious a lithographic projection assembly comprising, *inter alia*, a load lock arranged to transfer an object into and from a lithographic apparatus, said load lock comprising, *inter alia*, a processor in communication with a pump to depressurize the load lock volume by the pump from a first pressure to a second pressure, the processor also being arranged to control the temperature of the gas such that the object is at a predetermined temperature that is higher than the desired temperature when said processor starts depressurizing said load lock volume.

Claims 26-27 are patentable over the cited portions of Edo at least by virtue of their dependency from claim 25 and for the additional features recited therein.

Claim 28 is patentable over the cited portions of Edo for at least the same reasons as provided above for claim 1 and for the features recited therein. For example, the cited portions of Edo do not teach or render obvious a method for manufacturing method a device comprising, *inter alia*, controlling the temperature of the substrate via a gas in a volume between the substrate and the support structure such that the substrate is at a desired temperature at least before said substrate is transferred from said load lock towards the lithographic projection; and depressurizing a load lock volume by a pump from a first pressure to a second pressure with a processor, the processor arranged to control the temperature of the gas such that the substrate is at a predetermined temperature that is higher than the desired temperature when the processor starts depressurizing the load lock volume.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-4, 6-10, 12, 14 and 25-28 under 35 U.S.C. §102(b) based on Edo are respectfully requested.

Claims 1-3, 6, 10, 22 and 25-28 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Morita *et al.* (U.S. Patent No. 5,914,493) (hereinafter “Morita”). This rejection is respectfully traversed.

Claim 6 is cancelled without prejudice or disclaimer, thus rendering moot the rejection of this claim.

Claim 1 is discussed above and recites the features of claim 8, which claim has not been rejected or objected to based on Morita. Thus, it is respectfully submitted that claim 8 is patentable over the cited portions of Morita.

By way of review, the cited portions of Morita disclose a load lock chamber 3 provided adjacent an exposure unit 1. See Morita at FIG. 1. The load lock chamber includes

a holder 11 having conduits 10 in which a temperature controlled liquid or gas is continually circulated. *See* Morita at FIG. 2 and col. 5, lines 29-30.

However, unlike claim 1, the cited portions of Morita do not teach or render obvious a load lock for a lithographic apparatus arranged to transfer an object into and from the lithographic apparatus, comprising, *inter alia*, a processor in communication with a pump to depressurize the load lock volume by the pump from a first pressure to a second pressure, the processor also being arranged to control the temperature conditioned structure such that the object is at a predetermined temperature that is higher than said desired temperature when said processor starts depressurizing said load lock volume.

Claims 2-3 and 22 are patentable over the cited portions of Morita at least by virtue of their dependency from claim 1 and for the additional features recited therein.

Claim 10 has been amended to recite the features of claim 15, which are indicated as being allowable in the Office Action. Thus claim 10 is allowable.

Claim 25 is patentable over the cited portions of Morita for at least the same reasons as provided above for claim 1 and for the features recited therein. For example, the cited portions of Morita do not teach or render obvious a lithographic projection assembly comprising, *inter alia*, a load lock arranged to transfer an object into and from a lithographic apparatus, said load lock comprising, *inter alia*, a processor in communication with a pump to depressurize the load lock volume by the pump from a first pressure to a second pressure, the processor also being arranged to control the temperature of the gas such that the object is at a predetermined temperature that is higher than the desired temperature when said processor starts depressurizing said load lock volume.

Claims 26-27 are patentable over the cited portions of Edo at least by virtue of their dependency from claim 25 and for the additional features recited therein.

Claim 28 is patentable over the cited portions of Morita for at least the same reasons as provided above for claim 1 and for the features recited therein. For example, the cited portions of Morita do not teach or render obvious a method for manufacturing method a device comprising, *inter alia*, controlling the temperature of the substrate via a gas in a volume between the substrate and the support structure such that the substrate is at a desired temperature at least before said substrate is transferred from said load lock towards the lithographic projection; and depressurizing a load lock volume by a pump from a first pressure to a second pressure with a processor, the processor arranged to control the temperature of the gas such that the substrate is at a predetermined temperature that is higher

than the desired temperature when the processor starts depressurizing the load lock volume.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-3, 6, 10, 22 and 25-28 under 35 U.S.C. §102(b) based on Morita are respectfully requested.

Claims 1-6, 10, 14, and 25-28 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by the Japanese patent document 2001-222099 (hereinafter the “‘099 application”). This rejection is respectfully traversed.

Claim 6 is cancelled without prejudice or disclaimer, thus rendering moot the rejection of this claim.

Claim 1 is discussed above and recites the features of claim 8, which claim has not been rejected or objected to based on the ‘099 application. Thus, it is respectfully submitted that claim 8 is patentable over the cited portions of the ‘099 application.

By way of review, the cited portions of the ‘099 application disclose a load lock chamber 3 provided adjacent a handler 4. *See* the ‘099 application at FIG. 5. The load lock chamber includes an outer wall 16 having conduits 17 in which a temperature controlled liquid or gas is continually circulated. *See* the ‘099 application at FIG. 4.

However, unlike claim 1, the cited portions of the ‘099 application do not teach or render obvious a load lock for a lithographic apparatus arranged to transfer an object into and from the lithographic apparatus, comprising, *inter alia*, a processor in communication with a pump to depressurize the load lock volume by the pump from a first pressure to a second pressure, the processor also being arranged to control the temperature conditioned structure such that the object is at a predetermined temperature that is higher than said desired temperature when said processor starts depressurizing said load lock volume.

Claims 2-4 are patentable over the cited portions of the ‘099 application at least by virtue of their dependency from claim 1 and for the additional features recited therein.

Claim 5 is patentable over the cited portions of the ‘099 application at least because this claim recites a load lock for a lithographic apparatus arranged to transfer an object into and from the lithographic apparatus wherein, *inter alia*, said support unit is constructed and arranged to substantially protect said object from a gas flow against a surface of said object when said load lock volume is depressurized.

The Office Action indicates that “[w]ith respect to claim 5, the stage 40 protects the substrate during evacuation.” *See* Office Action at page 5, line 1. Respectfully, no such stage 40 is shown in the cited the ‘099 application. Further, nowhere do the cited portions of the ‘099 application remotely teach or suggest a support unit constructed and arranged to

substantially protect the object from a gas flow against a surface of said object when the load lock volume is depressurized. As can be seen in FIGS. 2-4 of the '099 application, the object is not protected from a gas flow against a surface of the object when the load lock volume is depressurized.

Claim 10 has been amended to recite the features of claim 15, which are indicated as being allowable in the Office Action. Thus, claim 10 is allowable.

Claim 14 is patentable over the cited portions of the '099 application at least by virtue of their dependency from claim 10 and for the additional features recited therein.

Claim 25 is patentable over the cited portions of the '099 application for at least the same reasons as provided above for claim 1 and for the features recited therein. For example, the cited portions of the '099 application do not teach or render obvious a lithographic projection assembly comprising, *inter alia*, a load lock arranged to transfer an object into and from a lithographic apparatus, said load lock comprising, *inter alia*, a processor in communication with a pump to depressurize the load lock volume by the pump from a first pressure to a second pressure, the processor also being arranged to control the temperature of the gas such that the object is at a predetermined temperature that is higher than the desired temperature when said processor starts depressurizing said load lock volume.

Claims 26-27 are patentable over the cited portions of the '099 application at least by virtue of their dependency from claim 25 and for the additional features recited therein.

Claim 28 is patentable over the cited portions of the '099 application for at least the same reasons as provided above for claim 1 and for the features recited therein. For example, the cited portions of Morita do not teach or render obvious a method for manufacturing method a device comprising, *inter alia*, controlling the temperature of the substrate via a gas in a volume between the substrate and the support structure such that the substrate is at a desired temperature at least before said substrate is transferred from said load lock towards the lithographic projection; and depressurizing a load lock volume by a pump from a first pressure to a second pressure with a processor, the processor arranged to control the temperature of the gas such that the substrate is at a predetermined temperature that is higher than the desired temperature when the processor starts depressurizing the load lock volume.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-6, 10, 14 and 25-28 under 35 U.S.C. §102(b) based on the '099 application are respectfully requested.

Claims 1-3, 6, 7, 9, 22, 23 and 24 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by the Japanese patent document JP 09-246347 (hereinafter the “‘347 application”). This rejection is respectfully traversed

Claim 6 is cancelled without prejudice or disclaimer, thus rendering moot the rejection of this claim.

Claim 1 is discussed above and recites the features of claim 8, which claim has not been rejected or objected to based on the ‘347 application. Thus, it is respectfully submitted that claim 8 is patentable over the cited portions of the ‘347 application.

By way of review, the cited portions of the ‘347 application disclose a load lock chamber 8 provided adjacent a multi-chamber type sputtering equipment 2. See the ‘347 application at paragraph 16 and FIG. 2.

However, unlike claim 1, the cited portions of the ‘347 application do not teach or render obvious a load lock for a lithographic apparatus arranged to transfer an object into and from the lithographic apparatus, comprising, *inter alia*, a processor in communication with a pump to depressurize the load lock volume by the pump from a first pressure to a second pressure, the processor also being arranged to control the temperature conditioned structure such that the object is at a predetermined temperature that is higher than said desired temperature when said processor starts depressurizing said load lock volume.

Claims 2-3, 9 and 22-24 are patentable over the cited portions of the ‘347 application at least by virtue of their dependency from claim 1 and for the additional features recited therein.

Claim 7 is discussed above. The Office Action refers to paragraph 15 and claim 17 of the ‘347 application as allegedly teaching or suggesting the features of claim 17. Applicant strenuously disagrees. First, as noted above, and unlike claim 7, the load lock 8 of the ‘347 application is a load lock for a multi-chamber type sputtering equipment 2, not a load lock for a lithographic apparatus arranged to transfer an object into and from the lithographic apparatus. Second, unlike claim 7, the cited portions of the ‘347 application do not teach or render obvious a processor in communication with a pump to depressurize the load lock volume by the pump to a predetermined first pressure, to wait during a predetermined time period and then to depressurize said load lock volume to a predetermined second pressure. Thus, it is respectfully submitted that claim 7 is patentable over the cited portions of ‘347 application.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-3, 6, 7, 9, 22, 23 and 24 under 35 U.S.C. §102(b) based on the '347 application are respectfully requested.

Claims 10-14 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Hirayanagi *et al.* (U.S. Published Application No. 2001/0016302 A1) (hereinafter "Hirayanagi"). This rejection is respectfully traversed.

Claim 10 has been amended to recite the features of claim 15, which are indicated as being allowable in the Office Action. Thus, claim 10 is allowable.

Claims 11-14 are patentable over the cited portions of the Hirayanagi at least by virtue of their dependency from claim 10 and for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection of claims 10-14 under 35 U.S.C. §102(b) based on Hirayanagi are respectfully requested.

Claims 10 and 12-14 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Kamiya (U.S. Patent No. 5,563,683). This rejection is respectfully traversed.

Claim 10 has been amended to recite the features of claim 15, which are indicated as being allowable in the Office Action. Thus, claim 10 is allowable.

Claims 12-14 are patentable over the cited portions of the Kamiya at least by virtue of their dependency from claim 10 and for the additional features recited therein.

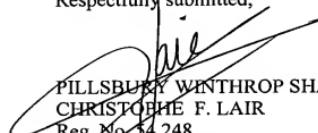
Accordingly, reconsideration and withdrawal of the rejection of claims 10 and 12-14 under 35 U.S.C. §102(b) based on Kamiya are respectfully requested.

In the Office Action, claims 15-21 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 10 has been amended to recite the features of claims 15. Claims 16-21 are patentable over the cited references at least by virtue of their dependency from claim 10.

All rejections and objections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

  
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